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? ds

Set     Items   Description
S1     140254   PARTICULATE?? OR (ALUMINUM(W)HYDROXIDE) OR (COLLOIDAL(W)GO-
             LD) OR (POLYSTYRENE(W)LATEX)
S2     296739   AGGREGAT?
S3       3984   S1 AND S2
S4     288154   SUGAR OR TREHALOSE OR CARBOHYDRATE
S5         75   S3 AND S4
S6         57   RD (unique items)
S7         25   S6 AND PY<=1994
S8    4715057   PREVENT? OR REDUC?
S9          7   S7 AND S8
? s scavenger(5n)radical
          30016  SCAVENGER
         359852  RADICAL
     S10  9049  SCAVENGER(5N)RADICAL
? s s4 and s10
         288154  S4
           9049  S10
     S11   100  S4 AND S10
? s mannitol
     S12   30088  MANNITOL
?  s s12 and s10
          30088  S12
           9049  S10
     S13   558  S12 AND S10
? s s13 and py<=1994
Processing
            558  S13
       25468139  PY<=1994
     S14   201  S13 AND PY<=1994
? s s14 and s1
            201  S14
         140254  S1
     S15     1  S14 AND S1
? t s15/3,k,ab/1

 15/3,K,AB/1     (Item 1 from file: 34)
DIALOG(R)File  34:SciSearch(R) Cited Ref Sci
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03315480  Genuine Article#: NW488  Number of References: 44
Title: EFFECT OF SCAVENGERS OF ACTIVE OXYGEN SPECIES ON CELL-DAMAGE CAUSED
    IN CHO-K1 CELLS BY PHENYLHYDROQUINONE, AN O-PHENYLPHENOL METABOLITE  (
    Abstract Available)
Author(s): TAYAMA S; NAKAGAWA Y
Corporate Source: TOKYO METROPOLITAN RES LAB PUBL HLTH,DEPT
    TOXICOL,SHINJUKU KU,3-24-1 HYAKUNINCHO/TOKYO 169//JAPAN/
Journal: MUTATION RESEARCH, 1994, V324, N3 (JUL), P121-131
ISSN: 0921-8262
Language: ENGLISH  Document Type: ARTICLE
Abstract: Phenylhydroquinone (PHQ), a metabolite of o-phenylphenol (OPP),
    is easily autoxidized to phenylbenzoquinone (PBQ) via the semiquinone
    (phenylsemiquinone, PSQ) with concomitant production of superoxide
    anion radicals (O-2(radical-anion)) We have used scavengers of active
    oxygen species to examine whether or not O-2(radical-anion) produced
    during oxidation of PHQ is related to cell damage in CHO-K1 cells. PHQ
    at 10 mu g/ml (3-h treatment) induced sister-chromatid exchange (SCE),
    endoreduplication (ERD) and cell-cycle delay in CHO-K1 cells. These
    effects were inhibited by catalase (280 U/ml), a scavenger of hydrogen
    peroxide (H2O2), as well as by the reductants, ascorbate (3 mM) and GSH
    (1 mM). Mannitol (50 mM), a scavenger of hydroxyl
    radical (OH.), was ineffective and superoxide dismutase (SOD, 150
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U/ml), a **scavenger** of O-2(**radical**-anion), or SOD plus catalase rather intensified the toxicity as did aminotriazole (20 mM), an inhibitor of catalase. Analyses of incubation solutions by HPLC showed that the extent of cell damage is correlated with PHQ loss; catalase suppressed PHQ loss, whereas SOD promoted it. The correlation was more clearly seen in the time courses of cell death and PHQ loss during incubation of PHQ with each of the scavengers of active oxygen species. These results show that neither O-2(radical-anion) nor OH. participates in the cell damage, but rather H2O2 generated via dismutation of O-2(radical-anion) may participate, probably by accelerating the autoxidation of PHQ and thus causing an increase in the production of toxic intermediates. In fact, conversion of PHQ to PBQ, a reactive product, was demonstrated during incubation with PHQ in phosphate-buffered saline by following the changes in W-visible spectra of PHQ. Inclusion of H2O2 (0.2 or 1 mM) in the incubation mixture accelerated the PHQ loss. The present results can be explained in terms of the autoxidation mechanism of hydroquinone proposed by O'Brien (1991). Different from the results in the absence of S9 mix, the cell damage induced by 50 mu g/ml OPP in the presence of S9 mix was not influenced by any of the scavengers of active oxygen species used. We conclude that PHQ causes cytotoxic and genotoxic effects through its autoxidation, both enzymatic and nonenzymatic, and that reactive intermediate(s) such as PSQ and/or PBQ may be ultimately responsible for the effects. H2O2 formed during the oxidation process participates in the damaging effects caused in the absence of S9 mix, probably by accelerating the autoxidation.

, **1994**
...Abstract: peroxide (H2O2), as well as by the reductants, ascorbate (3 mM) and GSH (1 mM). **Mannitol** (50 mM), a **scavenger** of hydroxyl **radical** (OH.), was ineffective and superoxide dismutase (SOD, 150 U/ml), a **scavenger** of O-2(**radical**-anion), or SOD plus catalase rather intensified the toxicity as did aminotriazole (20 mM), an...
Research Fronts: 92-0790 001 (BIOASSAY-DIRECTED CHEMICAL-ANALYSIS OF AMBIENT AIR **PARTICULATE** EXTRACTS; SALMONELLA MUTAGENICITY; ATMOSPHERIC POLYCYCLIC AROMATIC-HYDROCARBONS; AMES TEST)
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